



MUSTARD 'GAS'

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Agency for Toxic Substances and Disease Registry ToxFAQs

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This fact sheet answers the most frequently asked health questions (FAQs) about mustard 'gas.' For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

SUMMARY: The general population is not exposed to mustard "gas." The only possible exposure is at military installations where it is stored. Mustard "gas" can burn skin, cause blisters, and cause respiratory effects, such as coughing and bronchitis. Higher levels may cause death. This chemical has been found in at least 3 of 1,416 National Priorities List sites identified by the Environmental Protection Agency.

What is mustard "gas"?

(Pronounced müs'tərd gās)

Mustard "gas" refers to several manufactured chemicals including sulfur mustard. They do not occur naturally in the environment. The term gas is in quotes because mustard "gas" does not behave as a gas under ordinary conditions.

Mustard "gas" is really a liquid and is not likely to change into a gas immediately if it is released at ordinary temperatures. As a pure liquid, it is colorless and odorless, but when mixed with other chemicals, it looks brown and has a garlic-like smell.

Mustard "gas" was used in chemical warfare and was made in large amounts during World Wars I and II. It was reportedly used in the Iran-Iraq war in 1984–1988. It is not presently used in the United States, except for research purposes. The U.S. Secretary of Defense has been instructed to destroy all remaining stocks of lethal military chemical agents including mustard "gas" by 1997.

What happens to mustard "gas" when it enters the environment?

- ☐ The only way that mustard "gas" would enter the environment would be through an accidental release.

- ☐ Some evaporates from water and soil into air.
- ☐ We do not know what happens to it in the air.
- ☐ It does not easily go into water, and the amount that does breaks down quickly.
- ☐ It is more stable in soil than in water but still breaks down within days, depending on the outside temperature (cold weather makes it more stable).
- ☐ It does not go from soil to groundwater.
- ☐ Mustard "gas" does not build up in the tissues of animals because it breaks down so quickly.

How might I be exposed to mustard "gas"?

- ☐ Mustard "gas" is no longer made in the United States.
- ☐ The general public is not exposed to mustard "gas."
- ☐ Exposure is limited to those near or at the few military storage sites where this substance is stored.
- ☐ Exposure could occur from accidents at these military storage sites.
- ☐ Occupational exposures are currently limited to soldiers in combat; those involved in its shipment, storage, or disposal; and construction workers at storage sites.

ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html>

How can mustard "gas" affect my health?

Mustard "gas" is a chemical warfare agent that can cause skin burns and blisters and damage the respiratory tract. Mustard "gas" burns your skin and causes blisters within a few days. It is particularly harmful to the skin around sweaty parts of the body. It is also more harmful to the skin on hot, humid days, or in tropical climates. Mustard "gas" makes your eyes burn, your eyelids swell, and causes you to blink a lot.

If you breathe mustard "gas," it can cause coughing, bronchitis, and long-term respiratory disease. If you are exposed to a large amount of mustard "gas," you can eventually die from it.

Mustard "gas" did not cause birth defects or affect reproduction in rats that breathed it. We do not know if mustard "gas" can cause birth defects or affect people's ability to reproduce.

How likely is mustard "gas" to cause cancer?

The Department of Health and Human Services has determined that mustard "gas" is a known carcinogen.

Human studies have shown an increased incidence of lung cancer in factory workers who made mustard "gas," and animal studies have shown tumors from exposure to mustard "gas" in the air.

Is there a medical test to show whether I've been exposed to mustard "gas"?

There is no effective medical test to determine if you have been exposed to mustard "gas."

A breakdown product of mustard "gas" can be measured in urine, but this chemical can also be found in people who have not been exposed to mustard "gas."

Has the federal government made recommendations to protect human health?

The Environmental Protection Agency (EPA) requires that any accidental discharges or spills of mustard "gas" into the environment of 1 pound or more must be reported to the EPA.

The Department of Defense (DOD) has set a limit for the maximum concentration in air of 0.1 micrograms mustard "gas" per cubic meter of air ($0.1 \mu\text{g}/\text{m}^3$) for a 72-hour exposure for the general population. For workers, the limit is $3 \mu\text{g}/\text{m}^3$ for an 8-hour exposure and $30 \mu\text{g}/\text{m}^3$ for a 1-hour exposure to smoke or gasses released into the air.

Glossary

Carcinogen: A substance that can cause cancer.

Evaporate: To change into a vapor or a gas.

Ingesting: Taking food or drink into your body.

Microgram (μg): One millionth of a gram.

Tumor: An abnormal mass of tissue.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1992. Toxicological profile for mustard "gas." Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information?

For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 404-639-6359. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html> ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns

